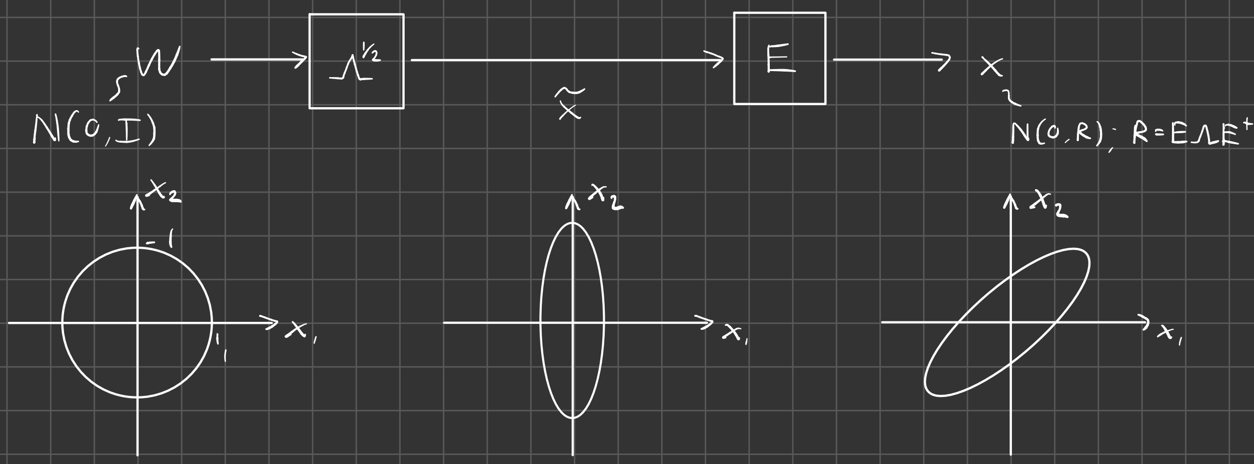
4.4) A new independent random vector from the distribution $X \sim N(0, R)$ can be generated using the following synthesis technique:

1) generate white noise $W \sim N(0,1)$
2) scale directions according to $\Lambda^{1/2}$ to form uncorrelated random vector $\tilde{X}$
3) Apply transformation E (eigenvectors of R) to correlate entries of $\tilde{X}$ to form X



$$\tilde{X} = \Lambda^{1/2} W \qquad X = E \Lambda^{1/2} W$$